

# **Chronic Wasting Disease Contingency Plan for Neal Smith National Wildlife Refuge**

## **Introduction**

The goal of this contingency plan is to minimize the negative impact of CWD on deer and elk on Service lands at Neal Smith National Wildlife Refuge (NSNWR) in Jasper County, Iowa, to define the response to an outbreak of Chronic Wasting Disease (CWD) in Iowa with regard to the free ranging deer and the elk herds currently kept in a large enclosed grazing area at the NSNWR, and to ensure coordination and communication with the appropriate agencies. The staff of NSNWR will work closely with the Iowa Department of Natural Resources (IDNR) using the IDNR guidelines on surveillance and detection policies already in place when making a decision on what action will be taken on the deer and elk herds.

## **Background of CWD**

Chronic Wasting Disease is a transmissible spongiform encephalopathy (TSE) affecting deer and elk (cervids) in North America. It affects an animal's nervous system and lymph tissues and eventually causes death. As of May 2004, CWD has been identified in 8 states and 1 Canadian Province for free-ranging deer and elk, and 9 states and 2 Canadian Provinces in cervid game farms. It is unclear how the disease is transmitted from animal to animal, but current information suggests CWD is passed by animal contact and even possibly the contamination of drinking water with feces, saliva, or urine of an infected animal. Some maternal infection may also take place but data shows this probability is very low and would be an unlikely means of transfer for a wide spread epidemic.

CWD was first identified in 1967 at a Colorado research facility in mule deer. It only affects deer and elk. Another North American cervid, the moose, does not seem to be affected, nor are bighorn sheep, pronghorn antelope, bison, or other ungulates that free range with the deer and elk. Domestic livestock like cattle, sheep, and goats that have shared space in research facilities with infected deer have not developed the disease, thus a local outbreak would not affect the NSNWR bison or the neighboring livestock. It is also important to point out that both the U.S. Center for Disease Control and Prevention and the World Health Organization, upon examining available data, have concluded there is no scientific evidence to support CWD can infect humans. However, as a precaution, the World Health Organization recommends that no part of a deer or elk diagnosed with CWD should be eaten by people or other animals.

The visible symptoms for a cervid with CWD are similar to the symptoms of other illness or an injury that may have occurred. They may include an increase or a decrease of

social interaction, periods of restlessness, repetitive movements, or allowance of unusually close approach by humans. In captive raised deer with CWD, excessive salivation, progressive weight loss, excessive urination, and holding the head in a lowered position have also been observed. There is no current treatment or vaccination for this disease, and an animal may live for a few days or 3 to 4 months after exhibiting the symptoms.

The test for CWD in an animal must be done posthumously. There is no current reliable test that can be performed on a living animal. The brainstem and retropharyngeal lymph nodes must be removed from the animal's carcass; preserved in formalin or alcohol; appropriately labeled with identification information (species, sex, approx. age, where and when collected, etc.); and immediately sent to the USDA's National Veterinary Services Lab (NVSL) in Ames, Iowa for testing.

## **Neighboring States to Iowa**

### **Wisconsin**

The Wisconsin Department of Natural Resources (WDNR) began CWD surveillance of hunter harvested deer in 1999. Through 2001, approximately 1,100 deer have been sampled throughout the state. Three male deer harvested in February 2002 from western Dane County in south-central Wisconsin tested positive for CWD. The Wisconsin Department of Natural Resources (WDNR) established a 12-mile surveillance area centered on the 3 cases. During March and April of 2002, 516 deer were collected of which 15 tested positive for CWD. These positive cases were primarily clustered within the surveillance area and not uniformly distributed throughout it. The WDNR established a disease eradication zone (DEZ) in Dane County and parts of 3 adjacent counties. The strategy is to reduce the deer numbers which in turn reduces the likelihood of transmission of the disease and will eventually lead to the eradication of the disease.

A second DEZ has been established in southern Wisconsin along the Illinois border in Rock County. Surveillance sampling was done in Rock county in response to CWD-positive cases found in Illinois. When 6 samples came back positive, the 25 square-mile DEZ was established and depopulation of the deer began.

### **Illinois**

In November of 2002, the Illinois Department of Natural Resources (IDNR) officials received confirmation of CWD in a free ranging deer. The deer had been sampled as part of routine testing of a suspect animal in Boone County in northern Illinois. As a result, 4,060 samples were collected in November and December from hunter harvested deer in 36 Illinois counties. Six additional CWD-positive deer were confirmed from these samples. Two areas of infection were identified: one along the Boone-Winnebag county line and one in McHenry county.

The ILDNR followed up with additional sampling in these 2 areas. Sharpshooters collected 185 samples from February 6, 2003 to March 31, 2003. The ILDNR sampled 62 deer from Boone County, 29 deer from McHenry County, and 94 deer from Winnebago County. None of the McHenry County deer were CWD-positive, but 5 from the Boone-Winnebago group were CWD-positive.

To date, a total of 15 CWD-positive animals have been identified: Boone County 9, Winnebago County 4, and McHenry County 2.

The ILDNR currently allows hunters to bring deer and elk harvested out-of-state into the state as long as the carcass is taken to a licensed meat processor or taxidermist within 72 hours of entry.

## **Missouri**

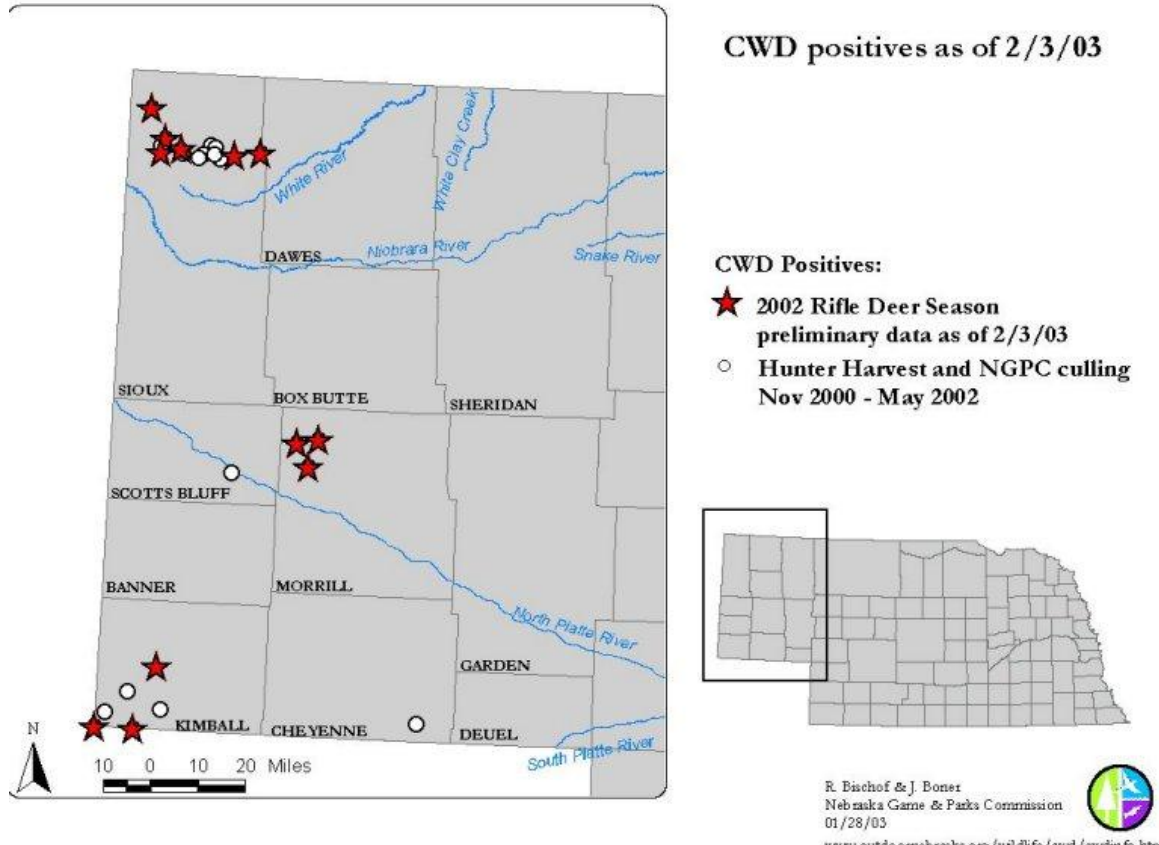
CWD has not been found in Missouri. In the fall of 2003, the Missouri Department of Conservation (MODC) tested almost 6,000 deer (almost all hunter harvested) from 30 counties across the state. All these samples were negative for CWD. In 2004, MODC will test deer from the remaining 54 counties. Hunters who check their deer at checking stations within these counties will be asked by technicians if a tissue sample may be taken. Participation is strictly voluntary but encouraged. Hunter participation will be needed for successful monitoring of CWD.

Fig. 3 Counties in Missouri which had CWD sampling for 2004 are highlighted.



deer had a 52% infection rate in 169 animals. Free ranging deer in proximity to the penned herd tested positive and depopulation was conducted.

As with other states neighboring Iowa, Nebraska's CWD management plan is a multi-state agency plan. The Nebraska Dept. of Agriculture (NDA) regulates the domestic cervine industry. The Nebraska Dept. of Environmental Quality (NDEQ) has regulatory authority over landfills and could be involved with carcass disposal although NGPC is charged with this responsibility.

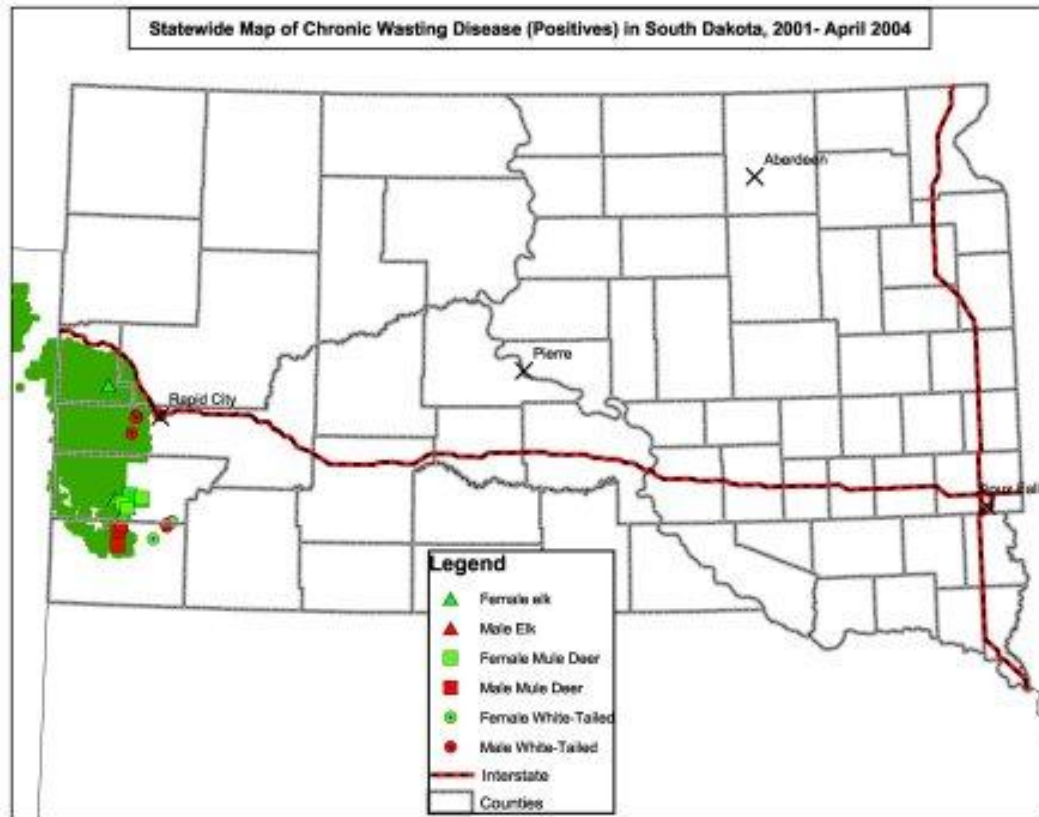


Nebraska's CWD plan incorporates similar methods of monitoring, preventing the spread of the disease, and educating the public. However, the plan also mandates that funds will be available through the NGPC for research into CWD.

## South Dakota

CWD was first found in South Dakota in 6 captive elk herds in the winter of 1997-98. This resulted in the State Animal Industry Board (AIB) quarantining 7 captive elk herds that were eventually depopulated. Monitoring by AIB continued and in August of 2002 CWD was found in another privately owned elk herd in the Black Hills. The first case of a free-roaming animal with CWD came from a hunted white-tailed deer in Autumn of 2001.

Since 1997, South Dakota Game, Fish, and Parks Department (GFP) have tested over 6000 deer and elk. There have been 22 cases of CWD identified. All the cases have been in or around the Black Hills region of the state.



South Dakota has established 3 goals in the state's CWD management plan. These goals are:

1. Monitor the occurrence of CWD
2. Prevent further spread of CWD and eliminate the infection where it exists
3. Educate the public.

To meet these established goals, the GFP will: continue testing collected tissue, focus efforts on geographic areas of concern, maintain involvement in multi-state CWD meetings, maintain communication with the AIB/State Veterinarian, establish a response to infection based on a 10% sample of baseline population, and provide regular, timely, and accurate information to the public.

## Minnesota

CWD has not been reported in free ranging deer in Minnesota; however, it has been recently diagnosed in a captive elk. Consequently, the Minnesota Department of Natural

Resources (MNDNR) has developed a contingency plan to guide MNDNR's response to a CWD outbreak, and it has developed more intensive, geographically-focused monitoring and surveillance programs.

During the 2004 fall deer season, the MNDNR will be taking samples from harvested deer at 135 registration stations. The MNDNR hopes to collect 13,000 to 14,000 samples to be tested.

Fig. 1 CWD in North America



### Elk at Neal Smith National Wildlife Refuge

NSNWR is a tallgrass prairie and savanna ecological restoration project designed to emulate the historic, natural landscape that occurred locally 160 years ago. Appropriate plants and animals of globally endangered tallgrass prairie and savanna ecosystems are being introduced and managed to develop and preserve a semblance of the natural landscape on 8,654 acres. Animal introductions have included elk.

**Elk are managed as a wildlife species on the refuge, and not as a game animal or for meat production, and as such refuge herds are exempt from the state elk registration program. This management is very different from elk managed on**



**game farms or for meat production. Animals are allowed to reproduce, and herd reduction is managed by refuge staff, but animals are not sold or distributed off-refuge. No tattoos or markings have been applied to the elk, as they are not routinely captured, nor would tattoos be easily visible. In addition, markings would negatively impact environmental education purposes of the refuge.**

**Though NSNWR is not participating in the state Cervidae CWD Surveillance Identification Program, the refuge does support CWD surveillance, and exceeds standards for testing elk for CWD, based on carrying capacity estimates for the bison/elk enclosure. See “Surveillance and Detection” for more details.**

### **Iowa’s Cervidae CWD program.**

**Iowa Department of Agriculture and Land Stewardship departmental rules.** The state veterinarian’s office will conduct the annual inventory of Cervidae in a herd enrolled in the Cervidae CWD Surveillance Identification program.

**Surveillance procedures.** For cervid herds enrolled in this voluntary certification program, surveillance procedures shall include the following:

**Slaughter establishments -** All slaughtered Cervidae 16 months of age or older must have brain tissue submitted at slaughter and examined for CWD by an approved laboratory.

This brain tissue sample will be obtained by a state or federal meat inspector or accredited veterinarian on the premises at the time of slaughter.

**Cervid herds -** All cervid herds must be under continuous surveillance for CWD as defined in the CCWDSI program.

**Identification –** Effective June 1, 2003, animals not identified with a tattoo must be identified with 2 forms of official identification.

**Official cervid tests.** The following are recognized as official cervid tests for CWD:

1. Histopathology
2. Immunohistochemistry
3. Western blot
4. Negative stain electron microscopy
5. Bioassay
6. Any other tests performed by an official laboratory to confirm a diagnosis of CWD

**Investigation of CWD affected animals identified through surveillance.** Traceback must be performed for all animals diagnosed at an approved laboratory as affected with CWD. All herds of origin and all adjacent herds having contact with affected animals as determined by the CCWDSI program must be investigated epidemiologically. All herds of origin, adjacent herds, and herds having contact with affected animals or exposed animals must be quarantined.



**Duration of quarantine.** Quarantines placed in accordance with these rules shall be removed as follows:

1. For herds of origin or herds having contact with affected or exposed animals, quarantines shall be removed after 5 years of compliance with these Iowa Department of Agriculture and Land Stewardship (IDALS) departmental rules.
2. For adjacent herds, quarantines shall be removed as directed by the state veterinarian in consultation with the epidemiologist.

**Identification and disposal requirements.** Affected and exposed animals must remain on the premises where they are found until they are identified and disposed of in accordance with direction from the state veterinarian.

**Cleaning and disinfecting.** Premises must be cleaned and disinfected under state supervision with 15 days after affected animals have been removed.

**Methods for obtaining certified CWD cervid herd status.** Certified CWD cervid herd status must include all Cervidae under common ownership. They cannot be commingled with other cervids that are not certified, and a minimum geographic separation of 30 feet between herds of different status must be maintained in accordance with the USDA Uniform Methods and Rules as defined in APHIS manual 91-45-011, revised as of January 22, 1999. A herd may qualify for status as certified CWD cervid herd by one of the following means:

1. Purchasing a certified CWD herd. Upon request and with proof of purchase, the department shall issue a new certificate in the new owner's name. Then anniversary date and herd status for the purchased animals shall be the same as for the herd to which the animals are added; or if part or all of the purchased herd is moved directly to premises that have no other Cervidae, the herd may retain the certified CWD status of the herd origin. The anniversary date of the new herd is the date of the most recent herd certification status certificate.
2. Upon request and with proof by records, a herd owner shall be issued a certified CWD cervid herd certificate by complying with the CCWDSI program for a period of 5 years.

**Recertification of CWD cervid herds.** A herd is certified for 12 months. Annual inventories conducted by state veterinarians are required every 9 to 15 months from the anniversary date. For continuous certification, adherence to the provisions in these rules and all other state laws and rules pertaining to the raising of cervids is required. A herd's certification status is immediately terminated and a herd investigation shall be initiated if CWD affected or exposed animals are determined to originate from that herd.

**Movement into a certified CWD cervid herd.** Animals originating from certified CWD cervid herds may move into another certified CWD cervid herd with no change on the status of the herd of destination. The movement of animals originating from non-certified or lesser status herds into certified CWD cervid herds will result in the redesignation of the herd of destination to a lesser status.

**Movement into a monitored CWD cervid herd.** Animals originating from a monitored CWD cervid herd may move into another monitored CWD cervid herd of the same status. The movement of animals originating from a herd which is not a monitored CWD cervid herd or from a lower status monitored CWD cervid herd will result in the redesignation of the herd of destination to a lesser status.

**Recognition of monitored CWD herds.** The state veterinarian shall issue a monitored CWD cervid herd certificate, including CWD monitored herd status as a CWD monitored Level 1 during the first calendar year, CWD monitored Level 2 during the second calendar year, CWD monitored Level 3 during the third calendar year, CWD monitored Level 4 during the fourth calendar year, CWD monitored Level 5 during the fifth calendar year, and CWD certification at the completion of the fifth calendar year and thereafter.

**Recognition of certified CWD cervid herds.** The state veterinarian shall issue a certified CWD cervid herd certificate when the herd first qualifies for the recertification. The state veterinarian shall issue a renewal form annually.

**Intrastate movement requirements.**

1. All intrastate movements of Cervidae other than to a state or federally inspected slaughter establishment shall be accompanied by an intrastate movement certificate of veterinary inspection signed by a licensed, accredited veterinarian. Movement of CWD susceptible Cervidae, other than direct movement to slaughter, shall only be allowed from herds that have been enrolled in the Iowa CWD monitoring program. As used in this subrule, “been enrolled” means that the herd owner has received from the department written notification of the herd’s enrollment and participation in the program.
2. Such an intrastate movement certificate shall include all of the following:
  - a. Consignor’s name and address.
  - b. Consignee’s name and address.
  - c. Individual, official identification of each animal.
  - d. For CWD susceptible Cervidae, the certificate shall include the CWD herd premises number, the herd status level, the anniversary date, and expiration date.
  - e. For Cervidae other than CWD susceptible Cervidae, the following statement must be included on the certificate:  
“The animal(s) has (have) not spent any time within the past 36 months in a zoo, animal menagerie, or like facility, or has not been on the same premises as a cervid herd which has been classified as a CWD infected herd, exposed herd or trace herd.”

**Import requirements.** Movement of CWD susceptible Cervidae, other than direct movement to slaughter, shall only be allowed from herds which have satisfactorily completed at least 3 years in an official, recognized CWD monitoring program.

1. All Cervidae entering Iowa must be accompanied by all of the following:

- a. An official Certificate of Veterinary Inspection
- b. A permit number requested by the licensed, accredited veterinarian signing the certificate and issued by the state veterinarian prior to movement. The permit number must be recorded on the certificate.
- c. One of the following statements must appear on the certificate:
  1. For CWD susceptible Cervidae: "All Cervidae on this certificate originate from a CWD monitored or certified herd in which these animals have been kept for at least 1 year or were natural additions. There has been no diagnosis, signs, or epidemiologic evidence of CWD in this herd for the past 5 years. All cervids listed are quarantined to the destination and shall be held in isolation until inspected by a departmental representative."
  2. For all Cervidae other than CWD susceptible Cervidae: "The animal(s) has (have) not spent any time within the past 36 months in a zoo, animal menagerie, or like facility, or has not been on the same premises as a cervid herd which has been classified as a CWD infected herd, exposed herd or trace herd. All cervids listed are quarantined to the destination and shall be held in isolation until inspected by a departmental representative."
- d. The CWD herd number, anniversary date, expiration date, and herd status for each individual animal must be listed on the Certificate of Veterinary Inspection. Each animal must be officially identified, and all forms of identification must be listed on the certificate.

Cervidae originating from an area considered to be endemic to the chronic wasting disease shall not be allowed entry into Iowa. Cervidae that originate from a herd that has had animal introductions from an area endemic to the chronic wasting disease during the preceeding 5 years shall not be allowed entry into Iowa.

**Whitetail deer hunting preserve-mandatory participation in CWD monitoring and surveillance program.** Whitetail deer hunting preserves, including those required to be licensed pursuant to 21-57.2(80GA, HF624), must participate in the CWD monitoring and surveillance program.

1. *Animal identification.* All Cervidae released into a whitetail deer hunting preserve after September 15, 2003, must be officially identified.
2. *Sampling rate.* Sampling for CWD surveillance must occur at a minimum rate sufficient to provide 90 percent confidence that the disease will be detected in the premises population if present at the rate of 5 percent of the animals. All animals added to the preserves pursuant to the September 15, 2003 date, must be tested upon death or removal from the premises.

**Mandatory Cervidae premises registration.** Commencing January 1, 2004, all premises with Cervidae must be registered with the department. Such a registration shall be renewed annually and expire December 31 of the year of registration. Registration fees of \$100 annually will be required to be submitted with the registration form; however, a licensed whitetail deer hunting preserve shall be exempt from paying a registration fee in addition to the whitetail deer hunting preserve licensing fee. In

addition, premises that house government-owned Cervidae or that operate as a nonprofit corporation shall have the registration fee waived.

*Fencing.* All premises containing Cervidae must be fenced in a manner to safely contain the Cervidae within the premises and to prevent egress and ingress of the captive animals and free roaming Cervidae. For premises that contain whitetail deer, such a fence shall be at least 8 feet in height and be of sound construction.

### **Iowa Dept. of Natural Resources CWD Plan in Brief**

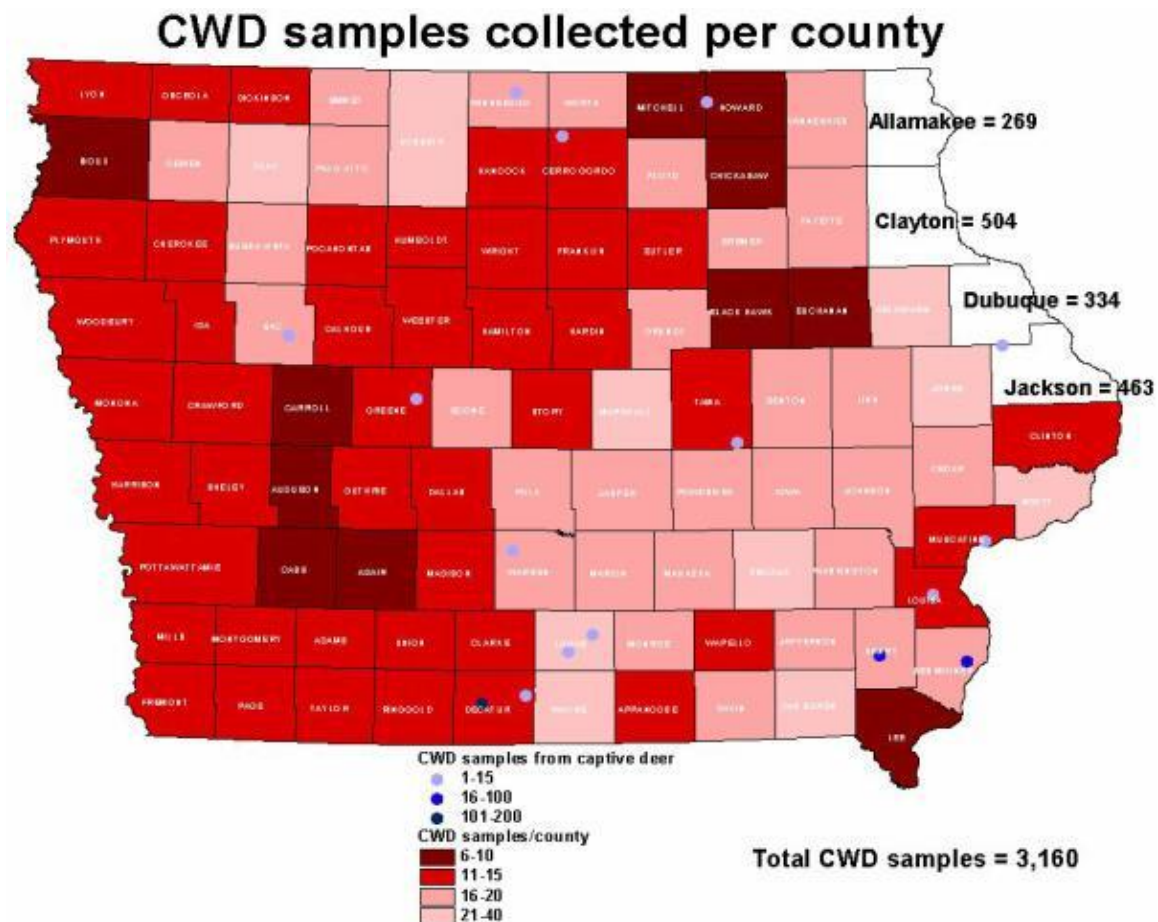
The Iowa Department of Natural Resources Wildlife and Law Enforcement Bureau have defined a set of 3 goals in its “Chronic Wasting Disease Response Plan”. The goals and impact on NSNWR are as follows:

**Goal 1 – Surveillance and Detection:** Personnel from the IDNR will track and monitor instances of CWD in both wild and captive cervid populations throughout the state. Deer and elk populations in Iowa will be monitored using all available targeted and active surveillance collection methods, including testing of road-killed deer, hunter’s bagged deer, and random out-of-season collection via IDNR personnel and issued crop nuisance tags to landowners.

The sampling goals are as follows:

All of Iowa’s 99 counties will be sampled over a 3 year period, with higher risk counties sampled more extensively over that period. There are 7 selected counties in extreme eastern and northeastern Iowa that will have 3,500 deer tested over this 3 year time period. Approximately 1,000 deer will be tested in the remaining 92 counties. Deer will be collected using both targeted surveillance on deer showing some symptoms of CWD, and active surveillance on seemingly healthy deer. The vast majority of the deer sampled (perhaps all the sampled deer from the counties with smaller sampling ranges) will come from hunters that volunteer their animals and from road kills.

NSNWR is in Jasper County. This county has a 3 year sampling quota of 16-20 deer.



**Goal 2 – Containment:** If CWD should be identified in Iowa, the IDNR and other state agencies will take actions to stop or greatly reduce the potential for spread. These actions will include but are not limited to halting transportation of any cervid within the state without an issued permit to do so from the IDNR, no placement of feed for wildlife within the state except from normal agricultural practices, no release into the wild of any rehabilitated deer, and no movement of deer or elk carcasses either into or out from the geographic affected areas.

**Goal 3 – Eradication:** In order to eliminate CWD from Iowa’s borders, the IDNR will take actions that include but are not limited to, issuing additional deer tags during normal hunting seasons within the affected areas, depopulation of deer and elk from selected areas outside the normal hunting seasons, and following the acceptable disposal methods for carcass elimination.

The containment and eradication guidelines are as follows:

Should a CWD test be positive for an animal from a captive cervid facility, the herd from the facility becomes the index case and using a Geographical Information System (GIS), a circle with a 5 mile radius is established centered on the index case. This circle defines a 79 square mile surveillance zone. Within this surveillance zone, approximately 300

deer of age 18 months or greater will be killed expeditiously and tested for CWD. If none of the sampled free ranging deer are positive with CWD, then the sampling method within the surveillance zone will revert back to the 3 year plan discussed earlier. However, should a CWD test come back positive, then total eradication of all free ranging and captive cervids within the 79 square mile zone will commence. All the animals killed that are 18 months or older will be tested for CWD. If no other test results come back positive from the 79 square mile depopulation zone, then the surveillance zone will then be expanded into two 15 mile radius zones with the 2 case indexes being the center points. (The first case index being the infected captive cervid and the second being the location where the free ranging cervid was killed.) A 3 year sampling of 4 deer per section within the 2 zones will take place. If a sampled deer tests positive for CWD, then the GIS will be used to establish new depopulation zones and again all killed deer 18 months or older will be tested. If no additional free ranging deer are found to be infected, then 15 mile radius circles (about 707 sq. miles) will be established with each of the positive tested deer locations as the center point and 3 year sampling will be done at a rate of 4 deer per section within the 707 square mile zones. If more sampled deer come back positive with CWD, this pattern will repeat until no more free ranging deer within the depopulation zones test positive for CWD.

### **How These Goals Affect and Apply to NSNWR**

**Surveillance and Detection:** NSNWR will regularly remove elk from the herd as a part of herd management. Though animals will not be killed and tested solely for the purpose of CWD testing, approximately 1-5 animals will be removed per year, depending on recruitment, and all of these animals will be tested for CWD. Herd size will be maintained at approximately 20 elk, and removal of animals will thus be at a rate of 5% - 25% of the size the maintained herd. Brainstems and lymph tissues will be removed from these animals, placed in a preservative, and sent to the National Veterinary Services Laboratory (NVSL) in Ames for testing. Elk that die from apparent natural causes, will similarly be tested for CWD.

Free ranging white-tailed deer on NSNWR lands will not be sampled by the Service personnel. However, if the IDNR requests deer samples from either hunted animals shot on NSNWR ground, or requests the right to shoot deer for sampling outside the normal hunting seasons, then NSNWR personnel will assist the IDNR in achieving the sampling goal. NSNWR reserves the right to request a copy of the test results from any deer taken for sampling outside normal hunting seasons.

**Communication and Education:** If CWD is detected in the state, communication among agencies and organization will be critical. The NSNWR Refuge Manager would be the contact person at the Refuge for any CWD related information to be discussed. NSNWR is located in the IDNR's Red Rock Management Unit and the IDNR biologist for this unit is Chuck Kakac. His office is in Indianola and the phone number is 515-961-0716.

All CWD surveillance and test results are monitored in Iowa and throughout the country by the State Wildlife Liaison Officer (SWLO), and the SWLO maintains the communication between the IDNR and the Iowa Department of Agriculture and Land Stewardship (IDALS). Currently Dale Garner, who is also Bureau Chief of Wildlife, is the SWLO, and his number is 515-281-7127. Dale also authored the *Iowa Department of Natural Resources Wildlife and Law Enforcement Bureau Chronic Wasting Disease Response Plan*.

If CWD occurs in Iowa, public interest will be acutely stimulated. NSNWR will cooperate with IDNR needs in providing accurate communication of the status of known CWD occurrence in the state, to answer questions about the risks, impacts and projected action as they are known to Refuge staff. Information will be provided to hunters using the refuge via hunter communication program, and to the general public and school children via Public Use and Environmental Education programs.

Information both current and general can be found at the Chronic Wasting Disease Alliance website at [www.cwd-info.org](http://www.cwd-info.org). Also, information may be obtained from the IDALS website at [www.agriculture.state.ia.us/cwdprogram.htm](http://www.agriculture.state.ia.us/cwdprogram.htm).

**Containment and Eradication:** These guidelines have the largest potential to impact the Refuge. In the first stage of sampling (i.e. a deer hunted from within the boundaries of the NSNWR or near it tests positive with CWD or an elk that has died and been tested comes back as testing positive for CWD), NSNWR would assist IDNR staff by providing access to refuge land, facilities, and pertinent information regarding the sampling of deer within the 79 square mile surveillance zone. If NSNWR is within the surveillance zone, the refuge would cooperate with the IDNR to provide access, facilities, and information to remove cervids as needed. Upon request by the IDNR, the elk herd would be destroyed as part of the depopulation process to prevent the spread of the disease, and the brainstems and lymph nodes would be removed for testing. The white-tailed deer on Service land will also be destroyed. The carcasses will be disposed of using acceptable guidelines of either incineration or deep burial.

**Implementation Costs:** Annual costs associated with this plan will vary depending on expansion and prevalence of the disease (see Table 1).

**Table 1.** NSNWR CWD Plan Implementation Estimated Annual Costs

<b>Administrative:</b>	
Supplies and Materials	\$1,000.00
Fuel	\$1,560.00
Annual CWD Test Costs	\$1,000.00
Per diem/lodging, etc. for Region 6 USFWS vet to assist the Refuge	\$4,000.00



<b>Surveillance</b>	
Targeted Surveillance (8 hours/week)	\$10,000.00
Passive Surveillance by refuge staff	\$0.00
<b>ANNUAL STAFF AND ADMIN COST:</b>	\$17,560.00